Success Story

Advanced Aerogel Insulation Products

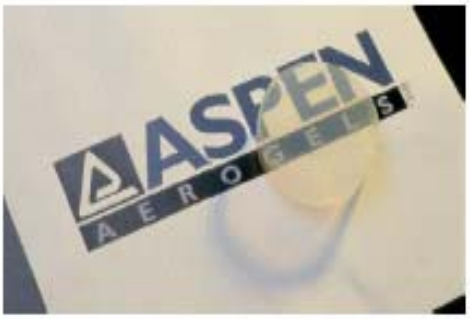

Figure 15. Sample of a transparent aerogel with 93%/cm transmission.

Aspen Systems, Inc., developed an improved aerogel-based flexible thermal insulation system. This system provides a cost effective and easier-to-handle alternatives to various types of multilayer and evacuated powder insulations now used on cryogenic equipment as well as many other applications. A fast and efficient manufacturing process speeds up the production of this high quality aerogel insulation system at least ten-fold compared to the conventional process. This process was developed by Aspen Aerogels Inc., a spin off company of Aspen Systems. The speed of this new process is virtually independent of production equipment size and can be used for producing large aerogel panels or blankets in a fast batch process.

Aspen Systems responded to NASA's need for a flexible, durable, easy-to-use aerogel system for cryogenic insulation for NASA's Space Flight Enterprise, specifically for the Space Shuttle launch applications on the launch vehicles, Space Shuttle upgrades, interplanetary propulsion, and life support equipment. These cryogenic insulation systems have potential applications for future space vehicles and structures as NASA plans to shift exploration toward the Moon and Mars in the next several decades.

The year 2002 marked the beginning of commercial viability for aerogel insulating materials after being essentially a laboratory curiosity with enormous commercial potential for over seven decades. This milestone was achieved as a result of research conducted by Aspen Systems initiated from an SBIR funding award from Kennedy Space Center in 1993 and the major technical advance in manufacturing by Aspen Aerogels, Inc. since 2001. During 2003 Aspen's aerogel insulation has penetrated into markets heretofore considered impractical. The impact of these materials has cut across a wide range of industries and applications including military, aerospace, residential and commercial building, refrigeration and cryogenics, apparel, oil and gas, fire protection/blast mitigation, and many others.

Innovative Technology Transfer Program

JOHN F. KENNEDY SPACE CENTER

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Two key factors, high processing cost and low form strength, which taken together constituted a phalanx of technological barriers preventing the leap from laboratory to the consumer were overcome using close to $5 million in SBIR funding from NASA and many other agencies since 1994. Aspen Systems, Inc. attracted a total of $36 million in venture capital to commercialize the advanced aerogel products through its spin off Aspen Aerogels Inc.

In recognition of its success in bringing an extremely promising and wide-ranging platform technology called aerogels to the commercialization stage, Aspen Systems, Inc. received the 1999 SBIR Technology of the Years, Manufacturing and Materials, and a 2003 R&D 100 Award along with NASA KSC and Aspen Aerogels, Inc. as co-recipients.